**Small Business Innovation Research/Small Business Tech Transfer**

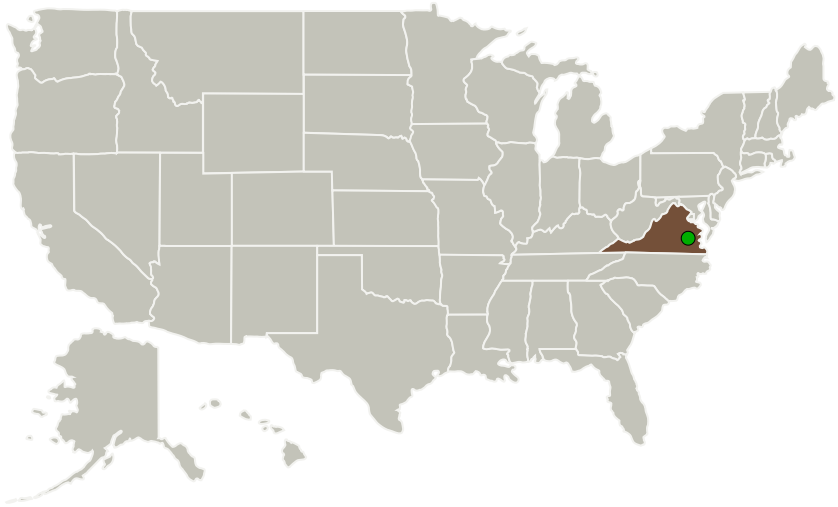
# Weather Scenario Generator for ATM Simulation and Testing Systems, Phase I

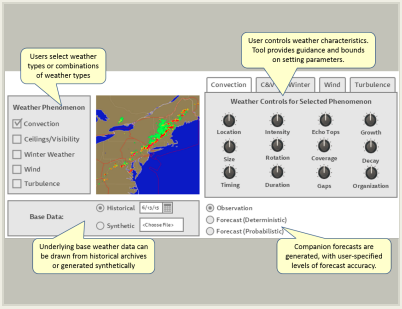
Completed Technology Project (2016 - 2016)

## Project Introduction

We design and prove the technical feasibility of a weather scenario generator (WSG) to provide an interoperable weather service that could support testing, development, and demonstration of advanced Concepts and Technologies (C&T) for Air Traffic Management (ATM) through modeling and simulation. Many recent advances in weather accountability for NAS simulation in support of C&T development are only able to manage one or two static weather scenarios, often limited to historical events which may be rare, and lack the ability to vary these scenarios to consider forecast accuracy variability and/or alternative impacts. The proposed WSG would address this shortfall by enabling creation of adjustable and meteorologically realistic scenarios comprised of observed ('actual') weather and associated forecast uncertainty for relevant NAS impacting weather phenomena. We design the WSG to work with NASA's SMART NAS to further its mission of delivering an evaluation capability that allows NextGen and beyond-NextGen C&T to be assessed and developed under realistic live/virtual/constructive weather conditions. Finally, this research provides guidance to NASA researchers or other users of testbeds, such as SMART NAS, on how to tailor weather scenarios for maximal effectiveness in experiments and demonstrations.

## Primary U.S. Work Locations and Key Partners



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# Weather Scenario Generator for ATM Simulation and Testing Systems, Phase I

Completed Technology Project (2016 - 2016)

| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| AvMet Applications | Lead Organization | Industry | Reston, Virginia |
| Langley Research Center(LaRC) | Supporting Organization | NASA Center | Hampton, Virginia |

| Primary U.S. Work Locations |
|---|
| Virginia |

## Project Transitions

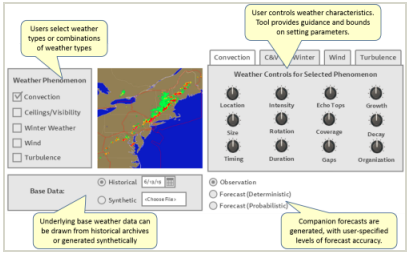
**June 2016:** Project Start

**December 2016:** Closed out

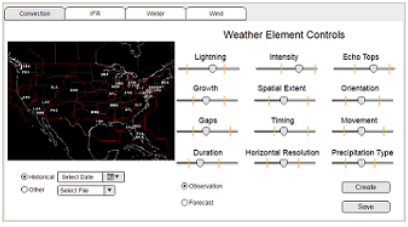
**Closeout Documentation:**

- Final Summary Chart*(https://techport.nasa.gov/file/139720)*

## Images




**Briefing Chart Image**
Weather Scenario Generator for ATM Simulation and Testing Systems, Phase I *(https://techport.nasa.gov/image/134987)*




**Final Summary Chart Image**
Weather Scenario Generator for ATM Simulation and Testing Systems, Phase I Project Image *(https://techport.nasa.gov/image/131879)*

## Organizational Responsibility

**Responsible Mission Directorate:**
Space Technology Mission Directorate (STMD)

**Lead Organization:**
AvMet Applications

**Responsible Program:**
Small Business Innovation Research/Small Business Tech Transfer

## Project Management

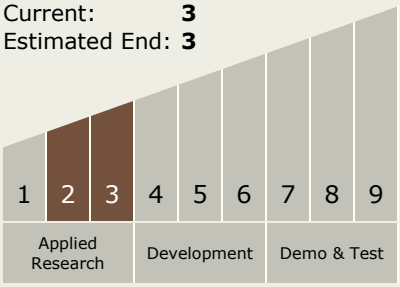
**Program Director:**
Jason L Kessler

**Program Manager:**
Carlos Torrez

**Principal Investigator:**
Colleen Reiche

## Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



# Weather Scenario Generator for ATM Simulation and Testing Systems, Phase I

Completed Technology Project (2016 - 2016)

## Technology Areas

**Primary:**

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.4 Collaborative Science and Engineering

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System